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ABSTRACT

This paper presents findings of a study that determined the contribution of selected factors to the ability of 15 school districts within the Toledo, Ohio metropolitan area to generate revenue over a 7-year period, 1982-88. Data were obtained from the Ohio Department of Education and the Ohio Department of Taxation. Simulations were prepared for each of the districts for each year. Although residential property valuation was the greatest contributor of increased revenue for 7 of the 15 districts, a variety of sources made the greatest contribution for the remaining districts. Additional state funding (Disadvantaged Pupil Impact Aid) was the largest contributor of revenue for Toledo, the urban district. The many sources of potential revenue growth made it difficult to compare the revenue performance of Ohio school districts; however, their diversity increased the chance that weakness in one source, such as property valuation, could be offset by strength in another area. Also, the diversity of these sources of revenue growth illustrates the difficulty in devising modifications to the school-finance system. Officials and patrons of school districts are unlikely to support changes in the funding system that benefit only neighboring districts. Three tables are included. (LMI)

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Shifts in District Revenues per Pupil within the Greater Toledo Metropolitan Area

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The fifteen districts included in the Toledo metropolitan area range in size and orientation from large and urban to small and rural. While the districts differ in these and many other respects, all of them are vitally in need of revenue growth. Overall revenue for districts in the Toledo area increased nn% during the period 1982 through 1988. During the previous six years, revenues per pupil grew by as little as 11% in Swanton and as much as 88% in Maumee. Increases in residential property valuation emerged as the revenue source most responsible for revenue increases in six of the districts. In the remaining districts, such disparate sources as property tax millage increases, the guarantee, increased commercial property valuation, and Disadvantaged Pupil Impact Aid were the largest contributors.

The attention of stakeholders in the Ohio school finance system is ordinarily focused on highly visible events such as the outcome of the record numbers of school district millage election issues, reports released by gubernatorial and legislative commissions and panels on school finance, and proposed changes in the biennial state foundation bill. As a result, the importance of factors within the present finance system may go nearly unnoticed. While the stakes riding on the outcome of political events are indisputably high, these activities may obscure significant shifts in the relative ability of school districts to generate revenue. The Ohio system of school finance is complex, and the contribution each factor supplies toward district revenues is not immediately evident. This study sought to broaden the understanding of the differences observed in school district revenues over the

past seven years by determining the contribution of selected factors to the ability of districts within the Toledo metropolitan area to generate revenue during the past seven years.

Table 1, Difference Between the Assessed Valuation per Pupil of Lucas County School Districts and the State Average Assessed Valuation per Pupil

School District	1967-78	1987-88 (updated)
Anthony Wayne	$ (4,943)	$ 2,802
Maumee	(3,481)	25,457
Oregon	12,423	35,098
Ottawa Hills	6,055	36,727
Springfield	(6,994)	5,127
Sylvania	(3,810)	12,169
Toledo	2,212	(6,476)
Washington	2,445	24,741

Most urban school systems are believed to be experiencing fiscal distress (Burrup, Brimley, & Garfield, 1988). Johns & Alexander (1971) observed that cities have a higher proportion of high cost pupils than suburban districts. In recognition of the higher cost of educating economically disadvantaged pupils, the state of Ohio provides substantial additional funding (DPIA) to districts such as Toledo which have a larger share of economically disadvantaged pupils. As local property wealth declines, the extent that DPIA is able to offset the decline becomes more important. Toledo's assessed valuation per pupil has declined over a recent seventeen-year period, particularly when compared to the other seven districts in the same county (Table 1). Toledo school district has gone from above to below the state average in assessed value per pupil while

the other districts moved above or further above the state average. Although losses in assessed valuation are offset to some extent by the state foundation aid formula, the importance of each of the factors that contribute toward total state and local revenue is difficult to discern. This paper will address the following questions in order to compare the contributions of selected factors in the state and local school finance system toward the revenues of Toledo City School District and fourteen neighboring suburban and rural school districts:

1. Have shifts in district revenues occurred among the fifteen districts during the period of interest? If so, which districts have benefitted and which have not?

2. What factors have made the greatest contribution to the present distribution of district revenues?

Method

The questions were addressed through a longitudinal study of the interaction of fiscal characteristics of the fifteen school districts comprising the greater metropolitan area of Toledo, Ohio. The method used in answering the research questions is patterned after that described by Barro (1988). A set of simulations were created that held constant, in turn, the factors contributing to total revenue for each of the districts. The results were analyzed to identify the contribution of the respective elements to annual district revenues over the period 1981-87. A brief description of the Ohio school finance system is provided to assist in defining the factors selected for analysis.

Factors Affecting State Aid Revenues

Ohio state aid to school districts is the sum of Basic Aid, DPIA, and Categorical Funding.

Basic Aid. A foundation plan is the basic model used to determine state aid for Ohio school districts. The foundation level is a single value determined by the legislature, but modified by a cost-of-doing-business factor (CDBF) that varies by county. The number of pupils enrolled (ADM), the foundation level, and the elements that are combined into the term "Assessed Valuation" were selected as factors. In Ohio, assessed valuation is made up of both real and tangible personal property. Real property is classified as residential, agricultural, commercial, industrial, mineral, or public utility; and tangible personal property consists of business tangible personal property and public utility tangible personal property. In addition, adjustments related to the training and experience of teachers, and the ratio of students to staff are made to basic aid. It was anticipated that the adjustments would have a negligible effect on revenues; as a result, the adjustments were considered as a single factor. The basic aid formula is presented below:

Basic Aid = ((ADM x Foundation Level x CDBF) -

(.02 x Assessed Valuation) + Adjustments))

Guarantee. The so-called "guarantee" is a special factor. To prevent districts from suffering a reduction in state aid, Ohio districts are guaranteed a percentage increase over the previous year's state aid amount. The level of the guarantee is determined by the legislature. During the period 1982-1988, the level of the guarantee varied from 101% to 107%. Districts receive the larger

of either basic aid or the guaranteed increase. In instances where the guarantee was greater than the formula amount, the formula factors made no contribution toward district state aid revenue. In order to determine the effect of the other formula factors, the guarantee was removed after its effect on state aid revenues was calculated.

DPIA. A final adjustment is made to the basic aid amount for districts that qualify for Disadvantaged Pupil Impact Aid (DPIA). The amount of additional aid is based on the percentage and number of economically disadvantaged pupils.

Categorical Funding. The amount each district received for each of the approved categorical areas was used as a factor. Categorical funding is the sum of approved vocational, special education, and gifted units plus approved extended service and transportation.

Factors: ADM, Foundation Level, Residential, Agricultural, Commercial, Industrial, and Public Utility Real Property; Business and Public Utility Personal Tangible Property; Adjustments; Guarantee; DPIA; Vocational, Special Education, Gifted, Extended Service, Transportation.

Factors Affecting Local Revenues

Local revenue is derived from the levy of three different millage rates against eight different types of property. In 1976, taxpayer protests over rising real property tax bills due to inflationary increases in property values led to the enactment of HB 920. As a result of this bill and a constitutional amendment in 1980, State Issue #1, two separate classes of real property were

established, and separate effective millage rates were calculated for the classes. Within each class, voted millage is adjusted downward as property increases in value. As a consequence of HB 920, school districts receive no revenue growth from real property unless new millage is authorized by the electorate or new wealth is added to the property tax rolls.

Real Property. Class 1 is comprised of agricultural and residential real property, and Class 2 is made up of all other real property; commercial, industrial, mineral, and public utility.

Personal Tangible Property. There are two types of personal tangible property: business and public utility. Personal tangible property is not affected by HB 920; accordingly, the full operating millage is levied against personal tangible property. However, the rate of assessment for business tangible personal property was reduced one percent annually during the period under study.

Factors: Agricultural, Residential, Commercial, Industrial, Mineral, and Public Utility Real Property; Business and Public Utility Personal Tangible Property; Class 1, Class 2, and Operating Millage.

Procedure

The factors for this study were obtained from data tapes provided by the Ohio Department of Education and the Ohio Department of Taxation, and the calculations were performed using SPSS-X and Lotus 1-2-3.

A model of the state and local revenue system was developed, using the factors and other variables needed to produce local and state revenue values. Revenues were simulated for each of the fifteen districts for the period 1982

through 1988. The model estimates revenues for the most recent year by resetting each factor to beginning year levels. Each factor, in turn, is reset to the beginning year value, and revenues are calculated for the districts again. As an example, ADM for the 1988 year was used, along with other 1988 data, to calculate state aid revenues for 1988. Next, 1982 ADM data were substituted for the 1988 ADM data and used with the 1988 data to calculate a second revenue value for each of the districts. The difference in revenues found in the two simulations can be attributed to the change in ADM. Each of the factors was treated in a like manner.

A basis for comparing the revenue increases or decreases attributable to each of the factors was needed. Selection of the original year as the base will result in larger changes for factors which increase revenue and smaller changes in factors which decrease revenue. Conversely, use of the current year as the base would result in the opposite case. Other alternatives exist; the mean of the two years or the total of the contributions of the factors could be used. The complex, multiplicative properties of the revenue formula belie any choice as obvious. In this study, selecting the current year as the base allowed the contribution of the individual factors to be presented in terms of a percentage of the revenue produced when all factors are set to the current year values. When a positive percentage results, the contribution of the factor over the period has declined; in other words, the revenue produced when the factor is set to the past year level is greater than the revenue produced when the factor is set to the current level.

To continue with the ADM example begun earlier, the difference in revenues found between the two simulations was divided by the 1988 revenue (produced with all 1988 values intact). The resulting percentage can be used to compare the contributions of all of the factors used in the revenue system.

Results

Simulations were prepared for each of the districts for each year, 1982-1988, with the values of each of the factors set at the current year level. The combined state and local revenues for each of the fifteen districts for each year of the study can be observed in Table 2.

Table 2, State and Local Revenues per Pupil for Toledo Area School Districts for the Period 1982 - 1988

	1982	1983	1984	1985	1986	1987	1988	Dollar Incr	Percent Incr
Maumee	2,410	2,594	3,343	3,423	3,562	3,828	4,533	2,123	88%
Oregon	2,262	2,536	2,817	2,776	3,594	3,920	4,007	1,746	77%
Springfield	2,142	2,480	2,832	2,975	3,447	3,520	3,584	1,443	67%
Sylvania	2,248	2,819	3,088	3,152	3,438	3,592	3,662	1,414	63%
Rossford	2,198	2,449	2,441	3,025	3,161	3,337	3,488	1,290	59%
PDY	2,173	2,330	2,586	2,716	2,873	2,991	3,163	990	46%
Ottawa Hills	3,329	3,018	3,504	3,732	4,267	4,495	4,532	1,203	36%
A Wayne	2,728	2,646	2,873	2,987	3,186	3,360	3,695	967	35%
Washington	3,053	2,728	3,003	3,218	3,295	3,980	4,054	1,001	33%
Perrysburg	2,799	2,525	2,652	2,779	2,936	3,082	3,587	788	28%
Evergreen 2,801	2,451	2,729	2,928	3,048	3,183	3,480	680	24%	
Toledo	3,398	3,135	3,415	3,579	3,773	4,130	4,211	813	24%
Northwood	2,832	2,705	2,856	2,910	3,287	3,437	3,464	632	22%
Otsego	2,646	2,365	2,573	2,738	2,917	3,091	3,122	476	18%
Swanton	2,712	2,274	2,493	2,626	2,754	2,944	3,023	312	11%

Corrected

The school districts are ranked in the order of relative gain in revenues per pupil over the seven-year period. The district with the greatest increase for the period, $2,123 and 88%, was Maumee. The increase caused Maumee to

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move up in rank from tenth to first in revenue per pupil. The district with the least increase in revenues was Swanton, with $312 and 11%. Toledo dropped from first to third in rank with an increase of $813 and 24%.

The contributions of the factors and accompanying percentages are presented in Table 3. Operating Millage was the greatest contributor to Maumee's revenue growth, followed sharply by a closely related factor, Class 1 Millage, Residential Property Valuation, Class 2 Millage, and Commercial property valuation. The largest contributions to Swanton's revenue over the same period can be attributed to valuation increases in Residential Property, then Commercial Property, Public Utility Personal Tangible Property, and categorical funding for Special and Vocational Education. The chief factors responsible for Maumee's revenue growth appear to be related to levy increases, a factor noticeably absent from the Swanton factors.

The largest contribution (-28.92%) of any of the factors can be found in the first column of Table 3. This percentage represents the contribution of the Residential factor in the Ottawa Hills school district. Revenue for this district would be nearly 30% less if this factor had not increased to the 1988 level. Ottawa Hills is a relatively small district, and the potency of this factor reflects the addition of a large development of expensive housing. By contrast, DPIA funding made the largest contribution to revenue for Toledo, the urban district. DPIA, represented by the smallest negative value in the first column (-4.73%), made the greatest contribution to revenue growth for Toledo of all the factors. The factor making the next greatest contribution for Toledo was DBECN,

Table 3, Contributions of Major Factors to State and Local Revenues of Toledo Metropolitan Area School Districts, 1982-1988

District	Contri-bution	Factor	Contri-bution	Factor	Contri-bution	Factor	Contri-bution	Factor
Maumee	-8.04%	OpMill	-7.87%	Class1	-6.20%	Res	-6.14%	Class2
Oregon	-9.64%	OpMill	-5.42%	Class1	-4.41%	Res	-2.54%	Indust
Sylvania	-13.89%	Res	-2.18%	Class1	-2.04%	Class2	1.94%	Com
Toledo	-4.73%	DPIA	-3.44%	DBECN	-2.90%	Res	-2.01%	Voc
Perrysburg	-17.30%	Guar	-16.59%	Res	-4.99%	Com	-4.23%	OpMill
Rossford	-9.81%	Guar	-9.16%	OpMill	-8.35%	Res	-3.73%	Class2
Evergreen	-8.04%	Res	-5.93%	Class2	-5.93%	Class1	-4.87%	Transp
PDY	-7.87%	Res	-4.24%	Voc	-4.12%	PUPers	-3.93%	OpMill
Swanton	-5.62%	Res	-2.39%	Com	-1.89%	PUPers	-1.77%	DBECN
A Wayne	-13.76%	Class1	-13.28%	Res	-9.36%	OpMill	-6.45%	Class2
Ottawa Hills	-28.92%	Res	-4.05%	Class1	-1.74%	OpMill	-1.52%	Class2
Springfield	-13.71%	Res	-8.68%	Class1	-7.88%	Com	-6.48%	OpMill
Washington	-5.30%	Com	-4.48%	Res	-4.08%	OpMill	-3.69%	Class1
Northwood	-7.54%	Class2	-7.01%	Res	-5.56%	OpMill	-2.78%	DPIA
Otsego	-10.20%	Res	-3.71%	OpMill	-3.56%	Transp	-3.31%	Voc

funding for approved special education units.

Although residential property valuation was the greatest contributor of increased revenue for seven of the fifteen districts, a variety of sources made the greatest contribution for the rest of the districts. Some form of property tax millage was the most important factor for four of them. The guarantee contributed most to increased revenue for two districts. Commercial property valuation and DPIA funding made the greatest contribution to the remaining two districts.

The many sources of potential revenue growth make it difficult to compare the revenue performance of districts in Ohio, but their diversity increases the chance that weakness in one source; e.g., property valuation, can be offset by strength in another area. Also, the diversity of these sources of

revenue growth illustrate the difficulty of devising modifications to the present school finance system. Officials and patrons of school districts are unlikely to support changes in the funding system that benefit neighboring districts, but not their own.

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